

**MONTEITHIUM STOREYI, A NEW SPECIES OF ADELIINI
(COLEOPTERA: TENEBRIONIDAE) FROM THE WET TROPICS
OF QUEENSLAND, AUSTRALIA**

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Abstract

Monteithium storeyi sp. n. is described from the Carbine Tableland in the Wet Tropics of northern Queensland. Characters are presented for distinguishing the new species from the related *M. ascetum* Matthews, and the distributions of both species are described and mapped. The taxonomic position and distribution of the genus *Monteithium* Matthews are discussed.

Introduction

The species described here was mentioned in the generic revision of Adeliini (Matthews 1998), under the code name *Monteithium* AD 24, as the second known species of this remarkable genus. However, it was not named or described there, although the female genitalia were illustrated because no females of the generitype *M. ascetum* Matthews were known (and this is still the case). Here, the opportunity is taken to describe AD 24 and name it in honour of the late Ross Storey. Ross was an inspiration to many of us and the cool, pristine rainforest of the Carbine Tableland, where this species lives, was a favourite beetle hunting ground of his.

The following abbreviations are used for specimen depositories: ANIC – Australian National Insect Collection, Canberra; QM – Queensland Museum, Brisbane; SAM – South Australian Museum, Adelaide.

***Monteithium* Matthews**

Monteithium Matthews, 1998: 803. Type species *Monteithium ascetum* Matthews, 1998, by original designation and monotypy; holotype ♂, Mt Sorrow Summit, Cape Tribulation, NE Queensland, QM (QMT 30101).

Diagnosis. All surfaces with curved setae holding a layer of fine soil in life. Antennae with segments 8-11 contrastingly tomentose and gradually enlarging, segment 7 cupuliform. Eyes oval in outline. Gula with anterior pit or deep longitudinal median sulcus. Pronotum with large median subcircular depression and median longitudinal sulcus, laterally with very strongly developed branched structures. Anterior edge of prosternum with a swollen collar, prosternal process very wide and biconvex. Metaventricle with a large median tumescence. Elytra densely and irregularly covered with prominent tubercles and lobed crests, each outgrowth, on both prothorax and elytra, capped with small shiny tubercles. Wings absent. All coxae widely separated, intercoxal process of first abdominal ventricle very broadly, slightly arcuately truncate. Abdominal segment VIII protruding from end of abdomen in males, otherwise genus without sexual dimorphism. Total length 4.5-6.7 mm.

Discussion. *Monteithium* is one of an apparently monophyletic group of ten genera informally called the 'northern squalid group' by Matthews (2003). The name refers to the largely northern distribution of the group in Queensland and New Caledonia, and to the fact that all members bear a coating of soil in life. *Monteithium* displays a number of synapomorphies with some other members of the group, notably (1) the differentiation of the last four antennomeres to form a loose, densely setose club which contrasts with the more glabrous previous segments (character state shared with three New Caledonian genera), (2) very strongly developed lateral pronotal outgrowths (shared with *Aoupinia* Matthews of New Caledonia), (3) a bilobed prosternal process (shared with five Australian and New Caledonian genera), (4) a large tumescence on the metaventricle (shared with the Australian *Adelodemus* Haag-Rutenberg and *Bellendenum* Matthews), and some other characters as listed by Matthews (2003). *Monteithium* in addition has two autapomorphies: (1) a cupuliform antennomere 7 and (2) a rounded, as opposed to reniform, eye shape. The new species will cause difficulty with the key to genera of Adeliini in Matthews (1998), p. 704, couplet 3(2) second half leading eventually to *Monteithium*, which states 'Gula without groove'. In fact this species has a deep median longitudinal gular groove (Fig. 2, g), normally bridged with soil and not evident, as in *Adelodemus*. In *M. ascetum* there is only a small gular pit at most.

In two separate cladistic analyses of the northern squalid group (Matthews 1998, 2003), *Monteithium* does not appear to be closely related to any other single genus.

Distribution. The distribution of the genus *Monteithium* lies within the Wet Tropics, a name given to the mountainous, high-rainfall, tropical region which lies between latitudes 15° and 19°S along the North Queensland coast. The distribution patterns of the region's biota have been well studied in modern times and have been summarised recently by Stork and Turton (2008). The region has been divided into about 17 endemism centres, each being a mountain massif complex divided from its neighbours by lowland or low rainfall corridors (Yeates *et al.* 2002, Yeates and Monteith 2008). A major faunal discontinuity, called the Black Mountain Corridor (BMC), divides the four northernmost endemism centres from the southern centres. Of the four genera of the 'northern squalid group' of genera in the Wet Tropics, *Monteithium* and *Bolusculus* occur only north of BMC, while *Bellendenum* and *Adelodemus* occur only to the south.

The portion of the Wet Tropics north of the BMC is shown in Fig. 1. The four endemism centres (Finnigan, Thornton, Windsor and Carbine) in the area are separated by the valleys (lowland corridors) of the small Bloomfield and larger Daintree Rivers. *M. ascetum* occurs in both centres north of the Daintree, while the new species occurs only on the Carbine Tableland, south of the Daintree. It is worth noting that all records for the genus are along

the wetter eastern rims of the three coastal massifs but it is absent from the drier inland Windsor Tableland. Thus high rainfall may be a requirement.

***Monteithium storeyi* sp. n.**

(Figs 1-3)

Types. *Holotype* ♂, NE QUEENSLAND: The Bluff, 11 km W of Mossman, 27.iv.1983, G.B. Monteith, D.K. Yeates, QM Berlesate No. 555, 16.27S 145.16E, rainforest, 900-1000 m, litter. (In Queensland Museum: QMT17847). *Paratypes* (14): 1 ♀, same data as holotype (T17846), QM; 2 ♂♂, 5.5 km N Mt Lewis, via Julatten, 8.ix.1981, G. Monteith & D. Cook, Q.M Berlesate No. 275, rainforest, 1100 m, sieved litter (T 17844, 17845), QM; 2 ♀♀, 16.51073S 145.26941E, Mt Lewis Road shed, 1187 m, 22.xi.2009, G.Monteith & F. Turco, sieved litter (QMT156379, 156380) QM; 1 ♀, 2.5 km N Mt Lewis, via Julatten, 3.xi.1983, D.K. Yeates & G.I. Thompson, QM Berlesate No. 613, 16.34S 145.16E, rainforest, 1040 m, sieved litter (T 17848), QM; 1 ♀, Mt Lewis summit, via Julatten, 10.ix.1981, G. Monteith & D. Cook, Q.M Berlesate No. 284, rainforest, 1200 m, stick brushings, SAM; 4 ♀♀, 1060 m, Mt Lewis, 20.vi.1971, Taylor Feehan, Berlesate ANIC.318, rainforest, 16.34S 145.17E, ANIC; 1 ♂, 2 ♀♀, same data but Berlesate 317, ANIC.

Description. With characteristics of genus as stated in diagnosis above. Colour rufo-castaneous when soil covering removed, antennal clubs paler, femora with wide pale band on distal half. Total length 4.7-6.7 mm, maximum width across humeri 3.0-3.5 mm.

Head. Clypeus and genae strongly separately convex with deep sulci flanking clypeus. Antennae with scape enlarged, segment 2 moniliform, 3 elongate and distally widened, longer than next two combined, 4-6 moniliform, 7 cupuliform, 8-11 contrastingly pale and tomentose, gradually enlarging, apical largest and suboval. Eyes transversely oval. Gula with deep longitudinal median groove.

Prothorax. Pronotal disc rugose, without anterior border but with sharply defined posterior border at lower plane than disc. Pronotal sides bearing very strongly developed, elevated dendritic crests forming irregular lobes divided into 2 clusters by a deep indentation, becoming larger and thicker posteriorly, all lobes capped by small shiny tubercles. Prosternum with curved setae. Deep sulci separating prosternum from hypomerall lobes.

Pterothorax. Elytra with numerous very prominent short-toothed longitudinal crests capped with small shiny tubercles, curved setae confined to tops of crests. An elevated row of shiny, close-set tubercles running along sutural edges of elytra.

Legs. Femora markedly constricted before middle, on distal half with a broad pale transverse band not reaching end. Meso- and metatibiae strongly sinuate and distally widened. Preapical tarsomeres with small lobe which may be angulate or rounded in outline. Basal segment of metatarsus subequal in length to claw segment. Plantar surfaces densely setose.

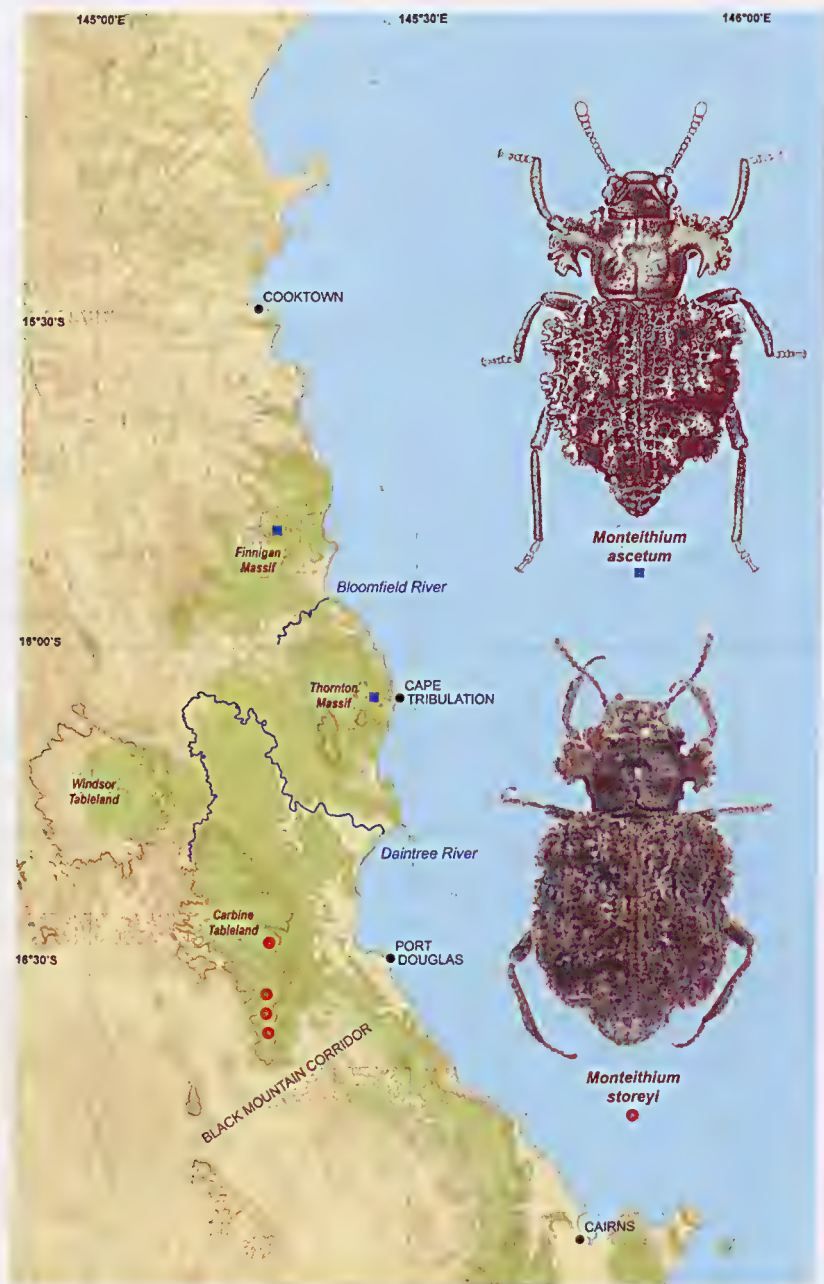
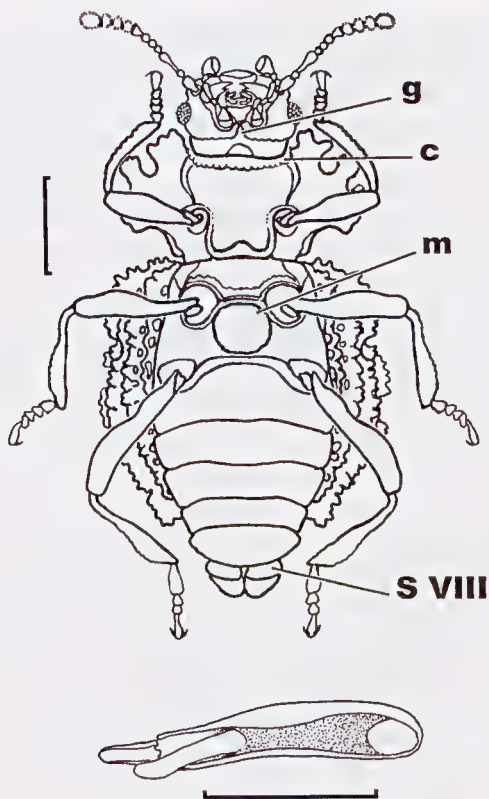


Fig. 1. *Monteithium ascetum* (length 4.8 mm) and *M. storeyi* (length 5.4 mm) superimposed on a map showing their distribution points within the northern sector of the Wet Tropics zone of North Queensland. Rainforest is shown in green and the 1000 m contour is highlighted.



Figs 2-3. *Monteithium storeyi*. (2) outline of underside of male: c, collar of prosternum; g, gular groove; m, metaventral tumescence; S VIII, visible part of sternite VIII. (3) aedeagus in ventral view. Scale bars = 1 mm.

Abdomen. Externally as for genus. Internally with relatively small defensive gland reservoirs, ovipositor with an extremely slender, elongate coxite lobe 4, vagina with two sclerites and a small conical diverticulum (see Matthews 1998: fig. 170). Aedeagus (Fig. 3) without alae (paramere extensions), with sides of basal piece not fused or meeting ventrally, median lobe with baculi not separately evident, apparently fused to form wide ventral plate for length of lobe.

Biology. All 15 specimens were taken by Berlese extraction from leaf litter samples from wet upland rainforests above about 1000 m altitude. No observations have been made on living animals. Most specimens are covered, above and below, with a thick layer of soil which is held on, in part, by the curved setae of the body surface. This completely obscures the surface sculpture of the elytra and the ornate lobes of the pronotum and presumably affords them good camouflage in the litter environment.

Discussion. The new species is readily recognised as a *Monteithium* by the exaggerated lateral pronotal outgrowths and prominent elytral sculpturing, large rounded depression in the middle of the pronotum, and four-segmented tomentose antennal club preceded by a cupuliform antennomere 7. It differs from the only other known species, *M. ascetum*, most obviously by the different form of the pronotal outgrowths. In *M. ascetum* these consist on each side of one very long anterior recurved structure, whereas in *M. storeyi* they form a number of prominent lobes, in two groups, emerging along the anterior half of the sides (Fig. 1). In addition, *M. storeyi* has a complete median gular groove (Fig. 2, g) whereas *M. ascetum* has only a small anterior pit there, sometimes absent; the femora in *M. storeyi* are quite strongly constricted before the middle and have a wide pale tan or whitish band on the distal half, absent in the other species, while the meso- and metatibiae are more sinuate.

Acknowledgements

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